The Economic Effects of Violent Conflict: Evidence from Asset Market Reactions

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Abstract

This paper studies the effects of conflict onset on asset markets applying the event study methodology. We consider a sample of 112 conflicts during the period 1974-2004 and find that a sizeable fraction of them had a significant impact on stock market indices and on major commodity prices. Furthermore, our results suggest that we are more likely to see investor reactions in response to conflicts that occur in highly polarized settings, possibly because the expected duration and intensity of the conflict is higher.

Keywords: Conflict onset, Event study, Asset markets, Polarization
JEL codes: G14, P16.

1. Introduction

The relationship between civil war and economic performance has recently come to the forefront of the economic debate. The growing interest in the economic causes and consequences of civil wars has spurred a large number of studies both in political science and in economics. Some of these studies explore the factors that affect the likelihood of conflict onset and duration (e.g., Collier and Hoeffler (1998, 2004), Montalvo and Reynal-Querol (2005)); other studies find a negative relationship between political instability and investments (e.g., Alesina and Perotti (1996) and Svensson (1998)). A common approach of these studies is to rely on cross country regressions in which dummy variables for the presence of conflict in a given country at a given time are correlated to investment rates, economic

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growth, natural resource endowments, and many other variables. One criticism often addressed to this approach is the difficulty in identifying a causal relationship between the occurrence of conflict and the variable(s) of interest.

The purpose of our paper is to effectively narrow down the analysis of the economic consequences of wars to a context where the endogeneity problem is relatively easier to address, namely the relationship between the *onset* of violent conflict and investors' perceptions as measured by *asset market reactions*. By asset markets we mean not only stock markets, but also the markets in which currencies, standardized commodities (such as oil and agricultural products), and futures contracts written on these underlying assets are traded. We do this by relying on a methodology that is widely applied in finance, but very seldom employed in the conflict literature: the event study approach.

Furthermore, a growing literature has addressed the relationship between polarization and conflict, by examining whether the degree of polarization in a society can explain the likelihood of conflict onset or the duration of conflicts once initiated (e.g., Horowitz (1985), Montalvo and Reynal-Querol (2005a, 2005b)). Very little is known, however, about the degree to which markets incorporate information about the extent of polarization and its potential effects on conflict. In this paper we try to establish a link between conflict onset, polarization, and asset market reactions by conducting our event studies separately for high and low polarization settings.

Our goal is thus threefold. First, we illustrate the event study methodology in a way that should make it easily applicable to the empirical analysis of conflict. Second, we provide original empirical results on the effects that the onset of war has on key economic indicators such as stock market indices, exchange rates, oil, and commodity prices. Finally, we investigate whether the effects of conflict on these variables differ depending on the degree of polarization of the country (countries) involved in the conflict.

We find that, while standard OLS regressions (i.e., the dummy regression approach) fail to find any significant effect on the full sample of conflicts, individual event studies do highlight some significant patterns. First of all, national stock markets are more likely to display positive reactions to conflict onset compared to the World market, suggesting the possibility of war-induced rallies in which investors tend to buy stocks and the initiation of conflict is seen as a sign of resolve. The US stock market is the one that displays the strongest reactions. When we distinguish between internal and international conflicts, we find that international conflicts tend to have a more significant impact on stock markets, in both directions (positive and negative). Among other assets, some indices react to both types of conflict (commodities and agricultural commodities), while others typically react to a single category (internal for the price of gold and international for the dollar exchange rate). When we classify events according to the region where they occur, we find that Asia and the Middle East are the regions where conflicts tend to have the strongest effects on asset markets. Location in the Middle East is obviously important for commodity indices including oil prices: 60% of the conflict onsets occurring in this region

have an impact on oil futures that is significantly different from zero. Finally, our results on the role of ethnic polarization in shaping investors' reactions suggest that markets do indeed take into account the social structure of the countries/regions where the conflict occurs when forming expectations on the intensity and duration of wars. For example, 18% of the international conflicts taking place in highly polarized countries have a negative impact on the World stock market index that we consider, while *none* of those taking place in countries with low polarization do. More generally, polarization seems to magnify asset market reactions to conflict onset.

This paper is related to several recent contributions that have explored the economic effects of civil conflict. Some studies apply the event study methodology to firm-level data and study how the stock prices of different firms respond to conflict in the regions where they operate. Abadie and Gardeazabal (2003) focus on the conflict in the Basque region and conduct an event study on the announcement (and subsequent end) of a cease-fire by ETA between 1998 and 1999. They find that only the stocks of firms whose business activities in the Basque Country were significant showed a positive response to the cease-fire. Guidolin and La Ferrara (2004) investigate the effects of civil war in Angola on the performance of diamond mining companies holding concessions in the country. They find that in concomitance with the termination of the war (as represented by the death of the rebels' leader Jonas Savimbi), the stocks of these companies showed negative abnormal returns, as opposed to positive. They interpret this finding in the light of the abnormal profit margins that some businesses can have in conflict environments.

Another set of studies focuses on financial indicators as opposed to firm-level data, and explores either the effect of the risk of war *ex ante*, or the consequences of differing intensities in conflict *ex post*. Among the former, Rigobon and Sack (2005) study the reaction of US financial indicators to "war risk" between January 2003 and March 2003, when the second Iraqi war became imminent. They find that increases in the level of war risk are associated to lower Treasury yields, lower equity prices, higher oil futures prices, and a fall in the dollar. Furthermore, a significant fraction of the variance of these variables in the period under consideration can be attributed to the perceived risk of war. Wolfers and Zitzewitz (2004) investigated the reaction of oil and stock prices to war-related news using prediction markets, and in particular a "Saddam Security" traded on Tradesports that paid $10 if Saddam Hussein had been removed from office by June 30, 2003. They interpret the evolution of this security's price as a proxy for the probability of war against Iraq between September 2002 and February 2003. Their findings indicated that ex ante a 10 percent increase in the probability of war increased spot oil prices by $1 and decreased the S&P500 by 1.5 percent. Finally, Schneider and Troeger (2004) study the reactions of three stock market indices (Dow Jones, FTSE and CAC) to the intensity of three conflicts in the period 1990-2000. Using Goldstein's (1992) indicator of conflictive versus cooperative events, they find that the intensification of conflict between the US-led alliance and Iraq had a positive impact on the Dow Jones, as this was perceived as a sign of Western resolve. For the other two conflicts, severe

conflictive developments had a negative impact on stock markets, while cooperative developments were perceived as good news in the Israeli-Palestinian conflict, and bad news in the ex-Yugoslavia.

One first dimension in which our paper differs from the existing literature is the methodology employed: we rely on event studies rather than on EGARCH and TGARCH model-based filtered measures of risk (volatility) because we are not dealing with high frequency data (in fact we use weekly and not daily data), hence the problems of time dependence in the variance are less serious, while the event study methodology allows us to exactly measure the effects of violent conflict news (initiations) on asset prices. Our work also differs from all three studies mentioned above because it considers a much broader set of conflicts, namely, all the conflicts for which the initiation can be dated in a precise week in the period 1974-2004. To this purpose, we use data on conflicts from the PRIO-Uppsala Armed Conflict Dataset 3.0 that can be assigned with high "precision" to a week within our sample period.

Moving away from case studies obviously has a cost, and that is the lack of precision on the daily evolution of the conflicts (or of perceptions about the risk of an impending conflict). Our indicator for the onset of conflict corresponds to the official starting date, and this is inevitably more or less accurate depending on the occurrence of previous events and on the degree to which a war was anticipated. However, it should be noted that these effects and measurement issues should bias our results towards finding *no effect* of a conflict on asset prices, in the sense that when the conflict is perceived as initiated by other events, the official starting date should contain no new information for market participants. To the extent that we do find significant effects, this can be interpreted as a signal that markets learn something in the week in which a war officially starts: the new information may be simply that the probability of conflict occurrence has increased from a positive (possibly high) value to one, or it may relate to the aggressiveness of each party and how long the conflict is going to last. On the other hand, using a large sample has the advantage of allowing us to draw general conclusions. In this sense we see our choice of conducting an event study analysis on the broadest possible set of conflicts for which political and financial data can be matched as the closest correspondent to the cross-country regressions on which much of the current debate is based.

The remainder of the paper is organized as follows. In section 2 we present a simple theoretical framework on asset market reactions to conflict news and on the role played by polarization in this context. In section 3 we illustrate the event study methodology, both in the standard version based on the selection of event and estimation windows, and in what we shall call the "dummy regression" approach. Section 5 contains our first body of empirical results. We start with an illustration of the event study methodology based on the second Iraqi war and then proceed to summarize the results from the full set of event studies and all conflicts occurred in the past thirty years, exploring market reactions to different types of conflict. In section 6 we perform an analogous exercise, but we allow reactions to differ according to the degree of polarization of the region where the conflict takes place. Finally, section 7 concludes.

2. **Theoretical framework**

The goal of our empirical exercise is to measure the effects of official conflict onset by looking at *investors' reactions*. Such a task is of importance not only to financial economists and practioners (who typically study the way in which news are compounded into equilibrium prices, see e.g. Bittlingmayer, 1998), but also to political scientists who may be interested in assessing both the ability of asset markets to *predict* situations of political tension (see e.g. Chan and Bobrow, 1981, for an early example) and the *effects* of conflicts on expectations and the process of capital accumulation. If security prices reflect the present discounted value of the long-run stream of cash flows generated by an asset, the measurement of the economic effects of conflict onset can be performed by looking at changes of asset prices that occur in connection with such events. As we shall conduct our analysis on several asset markets, possibly finding heterogeneous responses, in what follows we briefly address the question of why asset markets can react differently to the same news, and how variables that help to predict the intensity or duration of a conflict (e.g., polarization) may affect asset reactions.

One simple but ubiquitous empirical fact is that different asset markets react with different intensity to an identical piece of news. This happens rather frequently following announcements of changes in US interest rates, but also other kinds of (possibly political) news. The explanation of such heterogeneous reactions can sometimes be traced back to a number of well-defined economic laws (e.g. that arbitrage opportunities ought to be absent or short-lived), although the possibility to understand them in a unified explanatory framework also exists.

Let us start from the fact that all assets carry a positive value insofar as they will produce positive, possibly uncertain, cash flows at some future date. Such cash flow takes the form of an explicit monetary payment in the case of financial markets: stocks pay uncertain dividend streams; bonds pay relatively certain coupons; exchange rates correspond to the relative, current price of short-term deposits denominated in different currencies and which pay a predetermined interest rate. For other non-financial assets, the cash flows are implicit and take the form of future uncertain productive and/or consumption uses: for instance, a futures contract on coffee beans delivers a predetermined quantity of the commodity at a later date. In any event, such future, uncertain cash flows need to be *discounted* to the present in order to find the price of the underlying asset. The discount rate is best seen as time-dependent and uncertain, apt to reflect the underlying riskiness of the cash flows to be discounted, i.e., it will generally incorporate a risk premium that reflects the risk aversion of market participants.

We can summarize these considerations in the following pricing formula for a generic asset characterized by future, uncertain cash flow stream $\{C_{t+j}\}_{j=1}^{H}$:

$$P_t = \sum_{j=1}^{H} \frac{E_t[C_{t+j}]}{\prod_{j=1}^{H}(1 + r^f + E_t[\pi_{t+j}])},$$

where $E_t[\cdot]$ denotes the expectation operator conditional on $\mathcal{F}_t$, that is the information available at time

t; r^f is the constant riskless interest rate, and $\pi_{t+j} \geq 0$ is the future, uncertain risk premium required on the asset under consideration. H can be arbitrarily large, and in principle extend into the infinite future, like in the case of stocks.

At this point, a piece of news like the onset of a conflict consists of a change in the information set $\mathcal{F}_t$ that therefore goes (say) from $\mathcal{F}_{t-1}$ to $\mathcal{F}_t$. The news will affect the price of the asset through two channels: the sequence of expected, future cash flows $\{E_t[C_{t+j}]\}_{j=1}^{H}$ is also updated, and the sequence of future risk premia $\{E_t[\pi_{t+j}]\}_{j=1}^{H}$ also gets updated. This implies a change in the price of the asset, $\Delta P_t \equiv P_t - P_{t-1}$.

Consider now two different assets A and B, for example two national stock market indices. Three implications can be drawn from the simple formula above regarding the effects of political news on their prices. First, ΔP_t^A and ΔP_t^B may differ (and even have opposite signs) when either their expected cash flows $E_t[C_{t+j}]$ or their expected risk premia $E_t[\pi_{t+j}]$ react differently to the news. Second, these differences do not need to regard cash flows to be immediately received, but can refer to any period between t and H. For instance, a given political event may cause different reactions in two national stock markets, not because of its immediate impact on the GDP of the two countries in the following quarter, but because of its long-ranging effects, possibly for many years afterwards. Identical comments apply of course to the risk premia. Third, notice that changes in prices do not need to reflect objective changes in either fundamentals (cash flows) or riskiness of the two assets, but changes in their *expectations*, $E_t[\cdot]$. A diverging *perception* that the impact might be heterogeneous is more than sufficient to cause ΔP_t^A and ΔP_t^B to differ.

These different perceptions may arise for different assets, as in the example above, but also for seemingly similar news, e.g., conflicts occurring in the same region. It is therefore crucial to understand what factors affect investors' *expectations* on the effects that an event – in particular, the onset of a conflict – may have on future cash flows or risk premia. Any variable affecting the likelihood that the conflict is resolved quickly should play an important role, as well as variables that help predict the intensity of the conflict and the extent of disruption that it may bring to productive activities. In this paper we focus on one of these variables, namely, the degree of socioeconomic polarization of the country where the conflict takes place. Actually, due to data limitations at the cross country level, we are constrained to using ethnic polarization as a proxy for broader socioeconomic polarization.

The theoretical link between ethnic polarization and asset market reactions to conflict onset is ambiguous. On the one hand, in highly polarized societies it is easier to anticipate that a conflict may occur. This argument is put forward in the seminal work of Horowitz (1985) and recently supported by the empirical work of Montalvo and Reynal-Querol (2005a). To the extent that this is true, one should find that the "official" onset of a conflict should have a *weaker* impact on asset markets if it occurs in highly polarized environments, precisely because markets should have incorporated this expectation in advance.

On the other hand, polarization can also affect the perceived intensity and duration of conflict. Among others, La Porta et al. (1999) have argued that ethnically divided countries have more corrupt and less efficient governments which expropriate the ethnic losers. This in turn makes power sharing arrangements more difficult to sustain and increases the incentives of either side to prolong the conflict. Recent theoretical work by Slantchev (2004) and Ponsatí (2005) shows that war duration should be longer the "closer to parity" are the capabilities of the contending parties. If we consider that highly polarized societies are societies where the size of opponent groups is relatively more balanced (with the highest polarization occurring when society is split into two equally sized groups), then we obtain the prediction that conflict should last longer in more polarized settings. And indeed this is the empirical finding of Montalvo and Reynal-Querol's (2005b) paper: the authors find that, other things equal, an increase in ethnic polarization from zero to one doubles the median duration of a civil war. If this second effect (i.e., polarization increasing war duration) prevails, then we should expect asset market reactions to be *amplified* when conflict occurs in ethnically polarized countries. In particular, if a conflict onset is bad news, then it should be even more so in cases of "high polarization", and if conflict is good news, it should also be even more so in cases of "high polarization". Which of the two effects (predictability of onset or increased duration) prevails is eventually an empirical issue that cannot be unambiguously resolved on a theoretical level. Our empirical analysis will attempt to shed light on this question.

3. **Event study methodology**

The objective of the event study methodology (see the survey in Campbell et al. (1997)) is to quantify the overall reaction of the price of one or more assets to the occurrence of events the timing of which is known. In event studies, researchers aim at disentangling price reactions that can be attributed to 'normal', event-unrelated factors (such as general market conditions), from abnormal effects that can be reasonably imputed to the event under investigation. Such a task of separating event-driven from normal price oscillations is accomplished by estimating some kind of regression-type model that links asset returns to a number of explanatory variables that are suggested by financial theory. The residuals of this 'null' model are then interpreted as abnormal price fluctuations (abnormal returns) caused by the event under investigation.[1]

Denote with r_t the rate of return on an asset, defined as the percentage change in the price of the asset in the unit of time, including possible cash distributions (dividends, coupons, etc.). Call T the length of the period over which the null model is estimated. Then a factor model with structure

$$r_t = \alpha + \sum_{j=1}^{F} \beta_j f_{jt} + \epsilon_t, \tag{1}$$

[1]The model is defined to be the *null* one because - similarly to what happens in classical statistical hypothesis tests - under the assumption that the model perfectly describes the behavior of asset returns, its residuals will be zero-mean, white noise random variables that imply that the event(s) have no impact.

is fitted to a data set composed of T observations on asset returns and F explanatory factors $\{f_{1t}, ..., f_{Ft}\}$, where the errors ϵ_t are white noise (with constant standard error σ^ϵ) and $\alpha, \beta_1, ..., \beta_F$ are unknown parameters to be estimated. Application of standard econometric methods (such as OLS or GMM) will deliver point estimates $\hat{\alpha}, \hat{\beta}_1, ..., \hat{\beta}_F, \hat{\sigma}^\epsilon$ to be used in what follows.

[Insert Figure 1]

The timeline for an event study can easily be illustrated with reference to Figure 1. Call t_0 the date on which an event of interest has occurred. Since there is often some uncertainty concerning the exact moment in time in which the event has taken place or − more pertinently − on the precise moment in which asset markets operators might have formed a belief on a high likelihood of occurrence of the event, it is common practice to calculate and analyze the residuals from regressions like (1) not only with reference to time t_0, but instead over a wider *event window* $[t_0 - k, t_0 + k]$ composed of a total of $k + 1 \geq 1$ observations. Clearly, the case $k = 0$ corresponds to using information from the date of the event only. The residuals of interest − called *abnormal returns* − are then calculated as:

$$e_t \equiv \hat{\epsilon}_t = r_t - \hat{\alpha} - \sum_{j=1}^{F} \hat{\beta}_j f_{jt} \qquad t = t_0 - k, ..., t_0 + k \tag{2}$$

where $\hat{\alpha}, \hat{\beta}_1, ..., \hat{\beta}_F$ are the estimates obtained over the *estimation window* $[t_0 - k - T, t_0 - k - 1]$. The choice of estimating the parameters characterizing the null model on a window that precedes (and never overlaps with) the event window reflects a concern that the event(s) may have such powerful effects as to change the stochastic process followed by asset returns, i.e. the true (but unknown) values of the parameters $\alpha, \beta_1, ..., \beta_F, \sigma^\epsilon$.

Since the objective of event studies is to quantify the *overall*, abnormal impact of one or more events on asset prices, it is common practice to focus on a synthetic measure given by the cumulant of the abnormal returns (2) over the event window, the cumulative abnormal return CAR:

$$CAR \equiv \sum_{t=t_0-k}^{t_0+k-1} e_t.$$

At this point, $CAR > (<)0$ is suggestive of a positive (negative) impact of the event at time t_0 on asset prices.

Of course, researchers should be wary of cases in which $CAR \neq 0$ but the measure is negligible, especially when compared to the standard error of the null model. In other words, $CAR \neq 0$ might be due to pure chance and not to the ability of the event(s) to affect asset prices. As a result, it is now standard practice within the event study methodology to formally test the hypothesis

$$H_o: \quad CAR = 0 \tag{3}$$

against a two-sided alternative, i.e., that the event produces some kind of aggregate impact on asset returns, besides what is explained by the null model. Under standard statistical assumptions the null hypothesis (3) can be tested exploiting the fact that the standardized CAR has a known small-sample distribution:

$$\frac{CAR}{\sqrt{\hat{\sigma}^2 k + \hat{\sigma}^2 \boldsymbol{\iota}_k' \mathbf{X}'(\tilde{\mathbf{X}}'\tilde{\mathbf{X}})^{-1}\mathbf{X}'\boldsymbol{\iota}_k}} \sim t_{(T-F-1)}$$

where $\mathbf{X}_i \equiv [\boldsymbol{\iota}_k \ \mathbf{f}_1 \ ... \ \mathbf{f}_F]$ is the $k \times (F+1)$ matrix of regressors.[2] The (two-tailed) test statistic is distributed as a t-Student with $T - F - 1$ degrees of freedom (i.e. T estimation window observations, minus $F+1$ estimated parameters). Notice that the number of degrees of freedom is in practice related to the length of the estimation window and not to the event window.

Note that the selection of the null model relative to which abnormal asset returns are calculated plays a major role in the research design. In the literature two choices seem to be largely dominant: (i) the CAPM and a few of its extensions, i.e. a theoretically justified, general equilibrium benchmark; (ii) the so-called *Market Model*, which simply amounts to calculating which component of an asset return cannot be explained by its comovements with some general market index (i.e., a portfolio collecting a dominant portion of existing assets). For the market model the estimating equation becomes:

$$r_t = \alpha + \beta r_t^I + \epsilon_t, \tag{4}$$

where r_t^I is the market index. In practice, in this paper we estimate (4) using as a general market index either a wide US stock market index (like the Standard & Poors 500) or a global, World stock market index.[3]

3.1. *Dummy regression tests*

By construction, the event study methodology uses parameter estimates that are obtained over an estimation window that precedes the event window. However, the union of the event and estimation windows is often of a length $(T + k)$, which is largely inferior to the overall sample available on the behavior of asset prices. In fact, it is not infrequent to find applications in which only 20 percent or so of the available data are eventually employed. Another approach − often also defined (improperly) as an event study − consists of estimating a number of regressions in which the effects of events on asset returns is represented by appropriate dummy variables and the full sample is used.

Denote with τ the full length of the sample and consider the following Market Model:

$$r_t = \alpha + \beta r_t^I + \gamma I_t + \varepsilon_t \qquad t = 1, ..., \tau \tag{5}$$

[2] $\boldsymbol{\iota}_k$ is defined as a $k \times 1$ vector of ones. $\mathbf{f}_j \equiv [f_{jt_0-k} ... f_{jt_0+k-1}]'$ is a $k \times 1$ vector collecting the values assumed by the factors $j = 1, ..., F$. $\hat{\sigma}^2 \boldsymbol{\iota}_k' \mathbf{X}'(\tilde{\mathbf{X}}'\tilde{\mathbf{X}})^{-1}$ is the standard least squares covariance estimator.

[3] Clearly, when r_t is selected to be a wide US stock market index, r_t^I can only be specified to coincide with a World index.

where ε_t is white noise and I_t is an indicator variable that takes value 1 over the event period and zero otherwise. In the above formula, γ is the parameter of interest, as it measures the impact of the event on asset returns. Formally, under the hypothesis that $\gamma = 0$, the event fails to produce any effects on asset returns. A test for whether the event had a positive or negative effect on asset returns therefore simply amounts to a t-test of whether the estimated parameter γ is zero or is significantly different from zero.

4. **Data**

In our empirical analysis we use weekly data from January 2, 1974 to December 31, 2004 to assess the effects of conflict onset on several financial variables. For this purpose, we combine data on political events with data on stock and commodity prices. In what follows we briefly describe the variables we employ and the criteria for coding political events.

Our financial indicators include, first of all, stock market indices such as the S&P 500, MSCI (Morgan Stanley Capital International) stock indices for the World, the US, UK, France and Japan. We also use the trade-weighted exchange value of the US dollar versus major currencies; and the prices of oil, gold, the Goldman Sachs general commodities and agricultural commodities indices, and the CRB (Commodity Research Bureau) spot and future commodity indices. In particular, the Goldman Sachs agricultural commodities spot index refers to cocoa, coffee, corn, cotton, soybeans, sugar, and wheat. The general index includes weekly prices for energy (natural gas and petroleum), agricultural (see above), precious metals, and industrial metals commodities. The CRB indices are similarly defined.

Performing tests on *future* prices is particularly important in the case of commodity markets, since most of the speculative trades − by construction more susceptible to be driven by revisions of beliefs triggered by political events − take place in the futures segments and not in the spot markets where commodities are often actually delivered and may satisfy production/consumption demands. In particular, oil prices are taken from the Wall Street Journal and correspond to the closing settlement price on one-month future contracts written on West Texas Intermediate Oil stocks. Similarly, the tests concerning the gold price actually refer to the closing price of six-month futures contracts; also in this case, weekly settlement prices are compiled from the Wall Street Journal.

We also considered a sectoral stock market index which ex-ante might be of extreme interest, a defense equity index for the US. Specifically, we obtain data on the weekly values of the Dow Jones' Aerospace & Defense MicroSector Index, which is a continuously rebalanced basket comprising five blue chip stocks listed on the New York Stock Exchange.[4]

For information on political events, we rely on the PRIO-Uppsala Armed Conflict Dataset 3.0 (from now on ACD) and retain conflict episodes for which onset can be attributed to a precise week.[5] This

[4]The companies are Boeing, General Dynamics, Lockheed, Northrop, and Raytheon.

[5]In particular, we retain conflicts for which the start date is known with "precision" equal to one or two in the ACD.

gives us a total of 112 episodes. Of these, 84 can be classified as "internal", that is, they involve a government and some internal opposition without external interventions. The remaining 28 episodes pertain to what we loosely define as "international" conflicts, and they include what the ACD classifies as extrasystemic, interstate and internationalized conflicts.[6] Importantly, a large portion of these conflicts do not have a major economic or financial motivation, and often purely involve (i.e. they are internal to) countries of negligible international weight, both economic and political. For this reason, one would not ex ante expect a large number of significant episodes in the aggregate. Table 1 provides a breakdown of the full sample of conflict onsets into different categories.[7]

[Insert Table 1]

In addition to the distinction between internal and international conflicts, we try to identify patterns of differential investor reactions according to other possible classifications. One is based on the location of the conflict, i.e., we distinguish between conflicts taking place in Africa, Asia, America, Europe, and the Middle East. Another classification distinguishes between conflicts that involve oil producing countries and conflicts that do not. In particular, we label as "oil conflicts" those that take place in countries for which at least 1/3 of their export revenue comes from oil. The final distinction we make is between conflicts occurring in highly polarized regions and those occurring in low-polarization regions. For this purpose we rely on Montalvo and Reynal-Querol's (2005a) index of ethnic polarization for the country where the conflict takes place and classify as "high polarization" a value of the index greater or equal than the median, and as "low polarization" a value below the median.[8]

5. **Results**

In this section we present our results in three steps. We start with an illustration of the event study methodology taking as a case study the second war against Iraq. This allows us to present a graphical analysis as well as formal testing and to convey the flavor of the approach that we have applied to all 112 conflict episodes in our sample. We next present a summary of the results of this more comprehensive analysis, aggregating different episodes depending on the categories defined above. Finally, we report a series of estimated dummy regressions to see what results we get when we use the full sample and to illustrate the difference between the two approaches.

[6] "Extrasystemic" are conflicts between a state and a non-state group outside its territory; "interstate" are conflicts between two or more states; and "internationalized" are conflicts between the government and internal opposition with intervention from other states.

[7] A full list of conflict episodes with a brief description is available from the authors upon request.

[8] For weeks in which we have multiple conflicts or for conflicts occurring in the territory of more than one country (hence when we have multiple values of the polarization index), we have tried imputing several alternative values (e.g., the minimum, the maximum, and the average) and we generally get no significant difference in the results. Notice that this occurs in a very small number of cases (8 out of 112 conflict onsets).

5.1. *A case study of the Iraqi War*

It is useful to start by illustrating the event study methodology through an example: the invasion of Iraq on March 20, 2003 by the United States and a US-led coalition.[9] For this purpose, we select the week ending on March 21, 2003 as our event window and use an estimation window of 100 weeks before the onset of the conflict to recover the model parameters. We then test whether the "abnormal returns" recorded on a number of asset markets during the week of the event were significantly different from zero, and we report graphs with the evolution of the cumulative abnormal return in the five weeks before and after the event (just to give a sense of the overall evolution of prices in the period under consideration). The vertical lines in the figures below correspond to the week in which the event (conflict onset) took place.

[Insert Figures 2-4]

Starting with the performance of the stock market indices, the evolution of the CAR for the MSCI World index in Figure 2 shows a striking effect: the cumulative abnormal increase during the week ending March 21 calculated over the five preceding weeks is 10 percentage points, which is a huge overall return in financial terms. This is significant at the 1 percent level. Clearly, global investors perceived the official initiation of this conflict as "good news" despite the fact that it was not totally unanticipated. An overall positive effect also emerges for individual stock markets (although not for Japan) and the impact is not always statistically significant (see Figure 3). The impact on the more restricted index for the defense sector is also positive in the week of the conflict, although not statistically significant. Interestingly, the event follows a number of weeks in which this index had been performing very poorly, and the onset of the conflict marks a turnaround in the trend of the index (see Figure 4).

[Insert Figures 5-6]

Figure 5 shows the impact of the event on commodity markets: the effect is negative for all our commodity indices, and is largest in magnitude for commodity futures ("CRBfuture" and "GScommodity"), reaching a decline of 11 percentage points for the CRB index and of 16 percentage points for the Goldman Sachs index, compared to the five preceding weeks. Actually, for the latter index the drop is of more than 20 percentage points in two weeks, which appears to be of a first-magnitude scale. The difference between the reactions of spot vs. futures markets is easily traceable to the bigger role played by speculative demands components in the latter markets. Therefore world commodity markets seem to have perceived the actual invasion of Iraq as bad news, although once more the most sensible interpretation is that the arm wrestling between Saddam Hussein's regime and the international

[9]The coalition also includes (in decreasing order based on the number of troops committed): United Kingdom, South Korea, Italy, Poland, Ukraine, Georgia, Romania, Australia, Netherlands, Japan, Denmark, Bulgaria and several other countries with minor comitments.

community might have caused an excess demand motivated by the desire to hoard stocks and escape pessimistic but extreme scenarios (e.g. non-conventional war tactics on either sides): when such fears dissipate and the war is actually initiated, the excess demand disappears and commodity prices fall.

The most severe drop, however, is experienced by oil futures. It can be seen in Figure 6 that the cumulative abnormal return on West Texas intermediate oil future contracts was negative and about 34 percentage points in magnitude during the week of the conflict, when calculated with reference to the two preceding weeks; this effect is significant at the 1 percent level. Clearly, investors interpreted the initiation of a conventional, limited Iraqi War as an indication that the world's oil production would be affected on a limited scale only, thus curbing both speculative pressures and the tendency to hoard (i.e. to anticipate the timing of future, expected purchases).

[Insert Figure 7]

Finally, Figure 7 shows the evolution of the Gold futures index and of the trade-weighted dollar exchange rate. While there does not seem to be any statistically significant impact on futures gold prices (which decline very sluggishly), the effect is markedly positive and significant for the dollar. Again, this suggests that markets viewed the initiation of the conflict as positive for the US economy, possibly suggesting a war rally effect.

Overall, our results from this event study differ from those of Rigobon and Sack (2005) and Wolfers and Zitzewitz (2004), who find positive effects on oil prices and negative effects on the dollar. However, their analysis is *ex ante* and regards the perceived risk of war, while ours is *ex post* and reflects market reactions to how the actual initiation of the war (and possibly the evolution over the first few days of the conflict) would affect financial variables.

5.2. *A large sample event study: synthetic results*

In this section we summarize the results of the 112 event studies that we conducted, reporting the percentage of cases in which the null of no effect of the conflict was rejected against the alternative of negative or positive effect. We discuss in the main text the tests significant at the 5 percent level and for an event window including only the week of the conflict onset. However, we also performed sensitivity analysis for the cases in which the significance level is set at 10 percent or the event window is set to include the week before and the week after the conflict onset.[10]

[Insert Table 2]

Table 2 reports our first set of results on MSCI stock market indices. Starting from the full set of conflicts, we see that 11.2% of them have a negative and significant effect on the World index,

[10]The results, available from the authors upon request, are very similar.

and 6.7% have a positive effect. The US market seems to be the one that reacts the most, with 7.9% of the cases being negative and 12.4% being positive. This contrasts with the UK stock index (3.4% negative, 9% positive), with the French index (4.5% negative, 7.9% positive) and with the Japanese one (5.6% negative, 5.6% positive). In general, these reactions seem to be rather weak, as it seems that at most for only 20% of the conflict episodes in our sample stock prices reacted with appreciable strength. Interestingly, the national stock markets react − if at all − with price increases more frequently than with price declines. This is less surprising than it may seem as what may normally depress equity valuations is in practice the uncertainty on future streams of profits and discount rates that accompanies the periods that precede a conflict, not the onset of the conflict itself. The case study in Section 4.1 provides specific evidence on one such episode in which stock markets rallied up after a prolonged period of uncertainty on the impending war that lasted between the end of 2002 and March 2003. Interestingly, an overall, World equity index displays the opposite pattern, i.e. negative reactions occur more frequently than the positive ones: this is consistent with the stock markets of the countries directly involved (when in existence) as well as of the neighboring countries showing sharp drops, while the major national stock markets not involved often manifest an opposite trend. Finally, the fact that the US market appears to be the most reactive one (in both directions), may simply reflect the fact that over time the bulk of the speculative activity has moved towards the most efficient (i.e. least costly) financial centers (the NYSE and NASDAQ), while scores of companies not located in the United States have elected to be listed either in the US, or to issue synthetic securities (ADRs) that represent stock certificates issued outside the US. Additionally, especially since the mid-1980s, the US have been involved in an above-average number of international conflicts, often with the objective to police complex disputes. This creates a direct link between conflicts and the perspectives (e.g. budget deficits) of the US economy.

When we distinguish between internal and international conflicts, we find that in general the fraction of significant results is higher for international than for internal conflicts, in both directions. In this case, the markets of the US, the UK, and France display significant reactions in almost 25% of the conflicts, which seems remarkable given that also episodes of moderate international and/or economic relevance belong to our sample.[11] The only exception is the World stock market index, on which the share of internal conflicts having a *negative* impact was 13.4% , as compared to 8.3% of the international ones. However, only 4.5% of the internal conflicts had a *positive* impact on the World index, as opposed to 12.5% of the international ones. The markets that seem to react most differently to internal versus international conflicts are the UK and France. International conflicts seem to have abnormal positive effects on the UK stock market, and negative effect on the French one. In fact, the share of internal conflicts having a negative effects on stock prices is 3% for the UK and 1.5% for France, while the

[11]For example, it is not surprising to find that the Eritrea - Ethiopia conflict in May 1998 did not strongly affect the world stock markets. This comment applies to at least one-third of the episodes in our sample.

analogous figures for international conflicts are 4.2% and 16.7%, respectively. The latter figure is particularly high given the sample considered. The instances of positive impact, on the other hand, are 4.5% and 7.5% for the UK and France in the case of internal conflicts, and 20.8% and 8.3% for international ones. Again, the figure for the UK seems noteworthy. As in the full sample, when we disaggregate between internal and international conflicts the US index is the one that yields on average the highest proportion of significant results: 7.5% of internal conflicts have a negative impact, and 10.4% have a positive one, while for international conflicts these figures are 8.3% and 16.7%, respectively. This suggests two facts: first, international conflicts tend to affect stock markets more frequently; second, it is more likely that the US market reacts *positively* to the onset of conflicts rather than negatively. This is suggestive evidence for the possibilities of war rallies in the US stock market. Finally, the Japanese stock market index is relatively less responsive compared to the others: on average the fraction of significant effects is around 5% and there is no sensible difference between internal and international conflicts, nor between the likelihood of negative versus positive impact.

Next, we distinguish conflicts based on the region where they occur, namely, Africa, Asia, America, Europe, and the Middle East. Starting with the World MSCI stock index, the first notable result emerging from Table 2 is that 23.5% of the conflicts occurring in Asia have a negative and significant effect on this index, and only 5.9% have a positive effect. The second region in terms of incidence of "negative" conflicts is Europe: 11.8% of the conflicts occurring in Europe lead to negative abnormal returns in the World index, and 5.9% lead to positive abnormal returns. Africa, on the other hand, is the continent with the highest incidence of conflicts that are perceived as "good news" by world financial markets: 11.4% of the conflicts occurring in Africa lead to positive abnormal returns, as opposed to 8.6% that lead to negative returns. Contrary to common wisdom, the onset of conflicts in the Middle East does not seem to affect the World stock index more often than conflicts in other regions. Things change, however, when we look at the US stock market index: in this case 16.7% of the conflicts in the Middle East lead to negative abnormal returns, and there is not one single instance of positive returns. Indeed, the Middle East is in absolute terms the region where conflict has the strongest negative effects on the US stock market. On the contrary (with the partial exception of Africa), conflicts elsewhere in the world seem to positively affect US stock prices more often than they cause negative effects. Therefore, from a US perspective, there exists a clear difference between Middle-Eastern conflicts and all other conflicts. A possible speculative argument is that episodes involving Israel and hence the long-term alliance with the US may be driving this finding. Notice that the association between Middle-East and "oil conflicts" fails: US stock markets weakly react to oil-related episodes, and when they do, prices tend to climb up. The US defense sector seems to benefit (in net terms) from African conflicts and to derive losses from Middle-Eastern and oil-related episodes. Both patterns may be rationalized in the light of the sales patterns of the companies involved (i.e., Africa generates demand, while conflicts in

the Middle-East may erode the purchasing power of Israel).[12]

[Insert Table 3]

In Table 3 we report results on several indices of commodity prices, agricultural commodities, oil, gold and the dollar exchange rate. Our goal is to understand whether these prices respond to perceived shortages that may follow the war or, in the case of gold and the dollar, whether they act as safe-havens. As in the case of stock market indices, looking at the full sample of conflicts, it is difficult to identify any pattern: about 10-12% of the conflict onsets lead to rejections of the null of no effect, more often against the alternative of positive effects than against the alternative of negative effects. When we distinguish between internal and international conflicts, we see that some indices react to both types of conflict (for example, commodities and agricultural commodities), while others typically react to a single category. In particular, the price of gold only responds to internal conflicts, while the positive effect on the dollar exchange rate is most often observed in the presence of international conflicts. Looking within the set of commodity indices, international conflicts induce negative reactions in the CRB futures commodity index in 14.8% of the cases, while the figure is lower in the case of spot commodity indices. Also in this case, the effects on futures prices are stronger than those on spot prices, as one should expect. Finally, since different indices weight different markets/commodities differently, some heterogeneity in the responses to conflict events is visible.

In terms of location, conflicts occurring in the Middle East are the ones with the greatest impact on commodity prices, as measured by the Goldman Sachs indices, and especially on oil futures: 40% of conflict onsets in this region have a negative and significant impact on oil futures, and 20% have a positive impact. Location in the Middle East seems a better proxy for the importance of oil as a natural resource around which conflict may occur than the categorization of Fearon and Latin (2003) based on a country's oil exports as a share of the total. In fact only 17% of the conflicts classified as "oil-related" according to Fearon and Laitin's data have a significant impact on oil futures prices, either negative or positive (see the last row of Table 3). It is also interesting to notice that the reaction of a trade-weighted dollar exchange rate is roughly symmetric between positive and negative reactions for African, Asian, and Middle-Estern conflicts. On the contrary, European and American conflicts have no effect.

5.3. *Dummy regression approach*

[Insert Table 4]

[12] It is harder to interpret results for UK, France, and Japan. While in Japan the effects are generally weak, the UK stands out by reacting positively to both Middle-Eastern and oil-related conflicts. In this case, an explanation based on the fact that the UK is a net exporter of raw materials (in particular natural gas and also crude oil) may be appealing. More difficult to understand are the positive (but weak) reactions to European conflicts.

We conclude this section by performing a few full-sample, regression-based tests of the hypothesis that violent conflict does not impact asset prices. As discussed in Section 2.2, we use a dummy approach, in which the dates (weeks) of the onset of conflicts are simply represented by an indicator function that takes unit value. In Table 4, we report results of regressions explaining stock index returns. Results for commodities are qualitatively similar and therefore omitted, but they are available upon request.

Table 4 may be viewed as an enormous advertising spot supporting the usefulness of an event study approach to the investigation of the effects of political events on asset prices. Although a market model-based framework produces some interesting explanatory power for MSCI stock returns (with R-squares as high as 0.81 for US returns), in general the conflict dummy fails to be statistically significant. Moreover, the signs of the estimated coefficients associated with the conflict dummies are quite erratic, besides being small and therefore negligible also in an economic sense (typically a conflict moves returns less than 0.2% in absolute value).

When the estimation results are disaggregated on the basis of the internal vs. external nature of the conflict, or as a function of their geographical location, the picture hardly improves: only UK returns seem to react to conflict news, although the signs remain difficult to interpret and their size is rather small. Surprisingly, oil-related conflicts produce negligible effects on all stock indices under examination.

The reason for this lack of significance in aggregate OLS regressions is twofold. On the one hand, when the parameter on the conflict dummy is estimated by pooling episodes of major international relevance with minor ones, the resulting impact is naturally attenuated. Secondly, using the full sample to recover model parameter estimates amounts to incorporating some of the markets' "abnormal" reactions into the "normal" parameter estimates of non-conflict variables, which also produces an attenuation of the estimated conflict parameter. The event study approach improves the results on both grounds: first as it allows to study each conflict in isolation; second as it isolates the estimation from the event window and only collects abnormal reactions in the latter.

6. **Ethnic polarization and asset market reactions**

Our final goal is to assess the role played by polarization in shaping asset market reactions to the initiation of violent conflict. As we mentioned above, the onset of a conflict *per se* may not contain particularly useful information for investors, either because the conflict was already anticipated, or because too little is known about how the conflict will evolve. For this reason, any indicator that may affect either the likelihood of conflict or the subsequent duration and intensity may be valuable from the point of view of financial analysts. In what follows we take polarization to be one such variable and we try to shed light on the empirical relationships between ethnic polarization and asset market reactions by aggregating the result of our 112 event studies depending on the degree of ethnic polarization of the country where they occur. As we explained in section 3, we define as "highly polarized" conflicts that

take place in countries whose ethnic polarization index − as computed by Montalvo and Reynal-Querol (2005a) − is greater than or equal to the sample median, and we include in the "low polarization" category the remaining ones. Recall from section 2 that a priori we do not know whether to expect stronger results for the high or for the low polarization cases. On the one hand, in fact, conflict onset is easier to predict in polarized societies, hence the official starting date contains less information and we should get weaker results for high polarization cases. On the other hand, provided that polarization increases the duration (and intensity) of a war, we can also expect the economic effects of conflict to be magnified in polarized societies, and this would lead to more significant results for high polarization cases.

[Insert Tables 5, 6]

Table 5 contains results for stock market indices. As before, numbers in the Table represent the percentage of cases in which a given type of conflict had a negative or positive impact on stock abnormal returns, and this effect is significantly different from zero at the 5% level. The difference with respect to previous tables is that now, for each category of conflict, there are two rows: one referring to high polarization cases and one to low polarization ones. It is clear from the Table that high polarization reinforces, instead of attenuating, the impact of conflict onset on asset prices. In other words, of the two possible effects described above, the second one seems to prevail. Consider for example the MSCI World index. In 12.5% of the high polarization cases the index reacted negatively and significantly to the initiation of conflict, as opposed to 8.8% of the low polarization ones. The contrast is even more marked if we focus on international conflicts. More than 18% of the international conflicts taking place in highly polarized countries have a negative impact on the MSCI World index, and *none* of those taking place in countries with low polarization do. A similar pattern emerges for individual stock markets. Notice that the discrepancy between high and low polarization cases holds for both negative and positive reactions. For example, 27.3% of international conflicts occurring in highly polarized settings had a positive impact on the US index, and only 12.5% of those occurring in low polarization areas did. This is consistent with the conjecture that polarization "magnifies" the effects of conflict, rather than having an unambiguously good or bad effect.

When we examine the results on spot and future commodity prices as well as oil and gold future prices in Table 6, the pattern is again the same. In general, commodity futures react more to news about conflict onset when conflicts occur in highly polarized countries. To take an example, 13.3% of the "high polarization" conflicts had a positive impact on the Goldman Sachs commodity index, and none of the "low polarization" ones did. Within international conflicts, the share of positive (negative) effects on the Goldman Sachs commodity index was 18.2% (9.1%) for the high polarization cases, as opposed to zero in both directions for the low polarization ones. Similar results emerge, among other variables, for oil futures.

Overall, the fact that we find a significant role for polarization is quite extraordinary, given the coarse nature of this variable compared to the weekly-frequency financial data and to the degree of heterogeneity in our sample of conflicts. Our results suggest that further work in this direction may be fruitful.

7. **Concluding remarks**

Asset markets constitute an interesting environment to study the economic effects of violent conflict, because analysts and investors trading on such markets are generally sensitive to news regarding the future prospects of the economies that are of some importance for the assets they trade. In this paper we have applied the event study methodology − a methodology that is widely used in finance but seldom in political science − to study markets' reactions to the initiation of violent conflict. In order to conduct a large sample study, we consider as "events" all conflict onsets that can be dated in a precise week between 1974 and 2004. Surprisingly (given the degree of heterogeneity among conflicts and the fact that a number of them may have been anticipated), we do find significant effects on asset prices in a non-negligible fraction of the cases. Also, ethnic polarization in the region where the conflict occurs seems to have some predictive power, most likely as it is perceived to increase the intensity and duration of the conflict. Our results suggest the usefulness of applying this methodology to both large sample and to detailed case studies within the conflict literature. Furthermore, enriching existing cross country databases to include other indices of polarization (in addition to the ethnic polarization index we employ) could allow a more systematic study of the relationship between socioeconomic polarization and asset market reactions.

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Annex - Figures

Figure 1: Timeline for event study

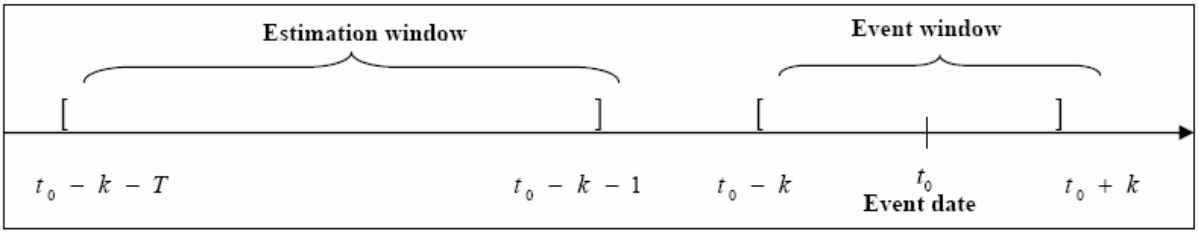


Figure 2: The world stock market

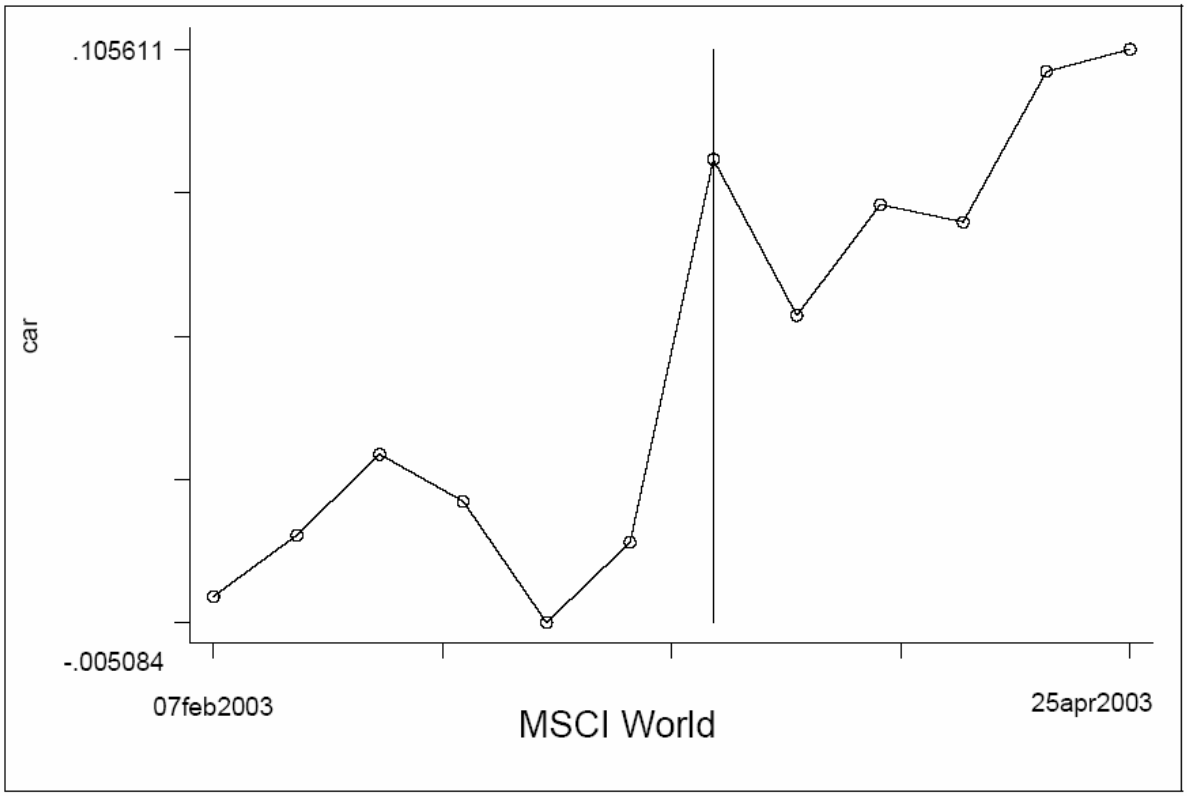


Figure 3: Reactions across markets

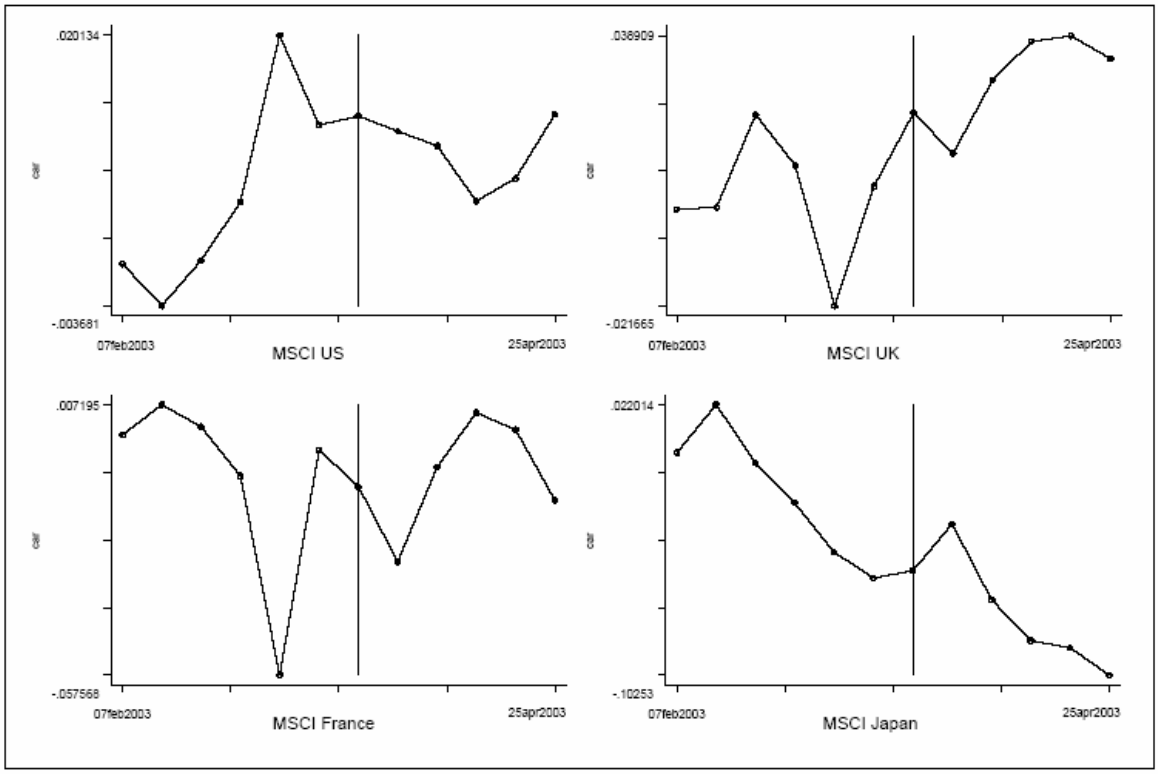


Figure 4: Defense index

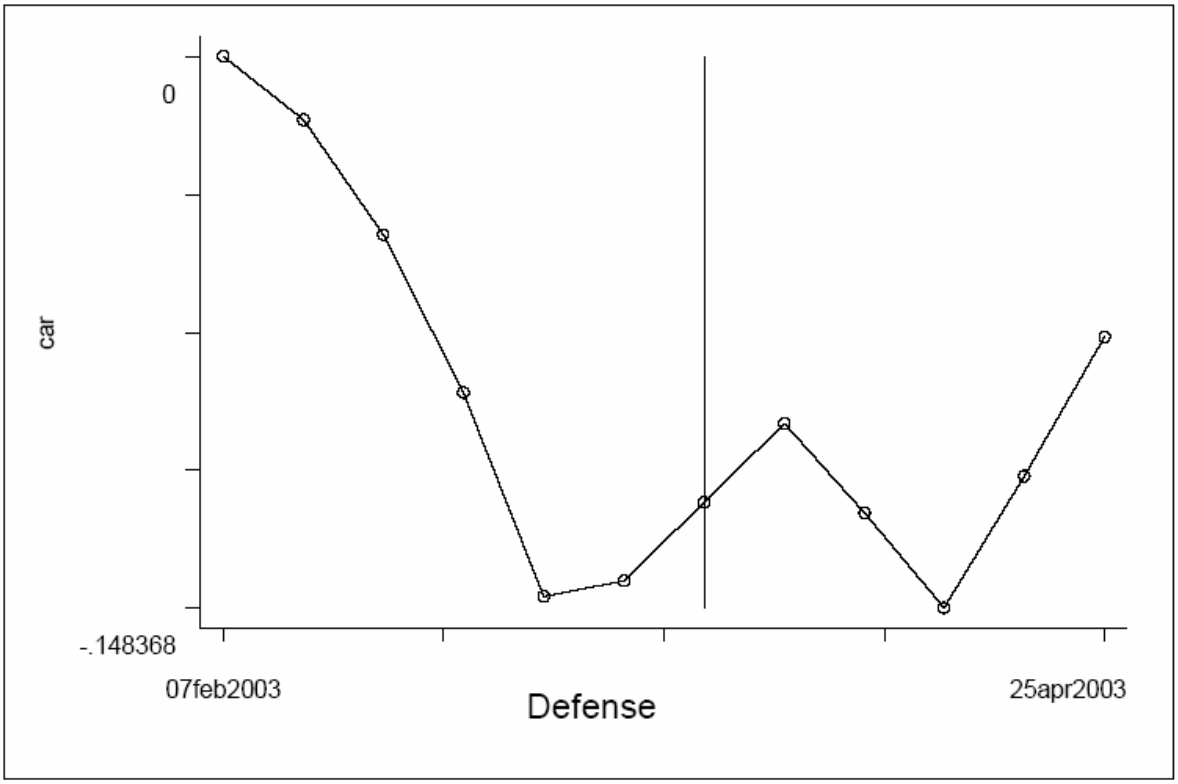


Figure 5: Commodities

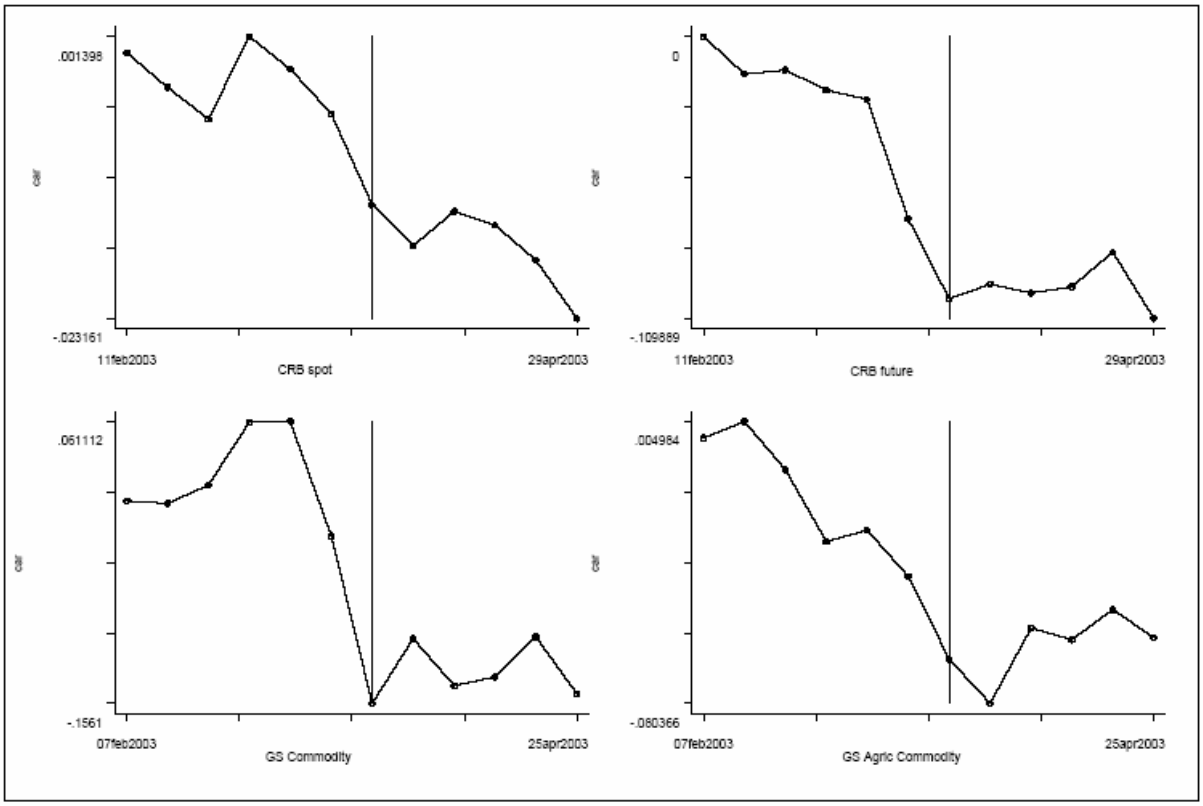


Figure 6: Oil futures

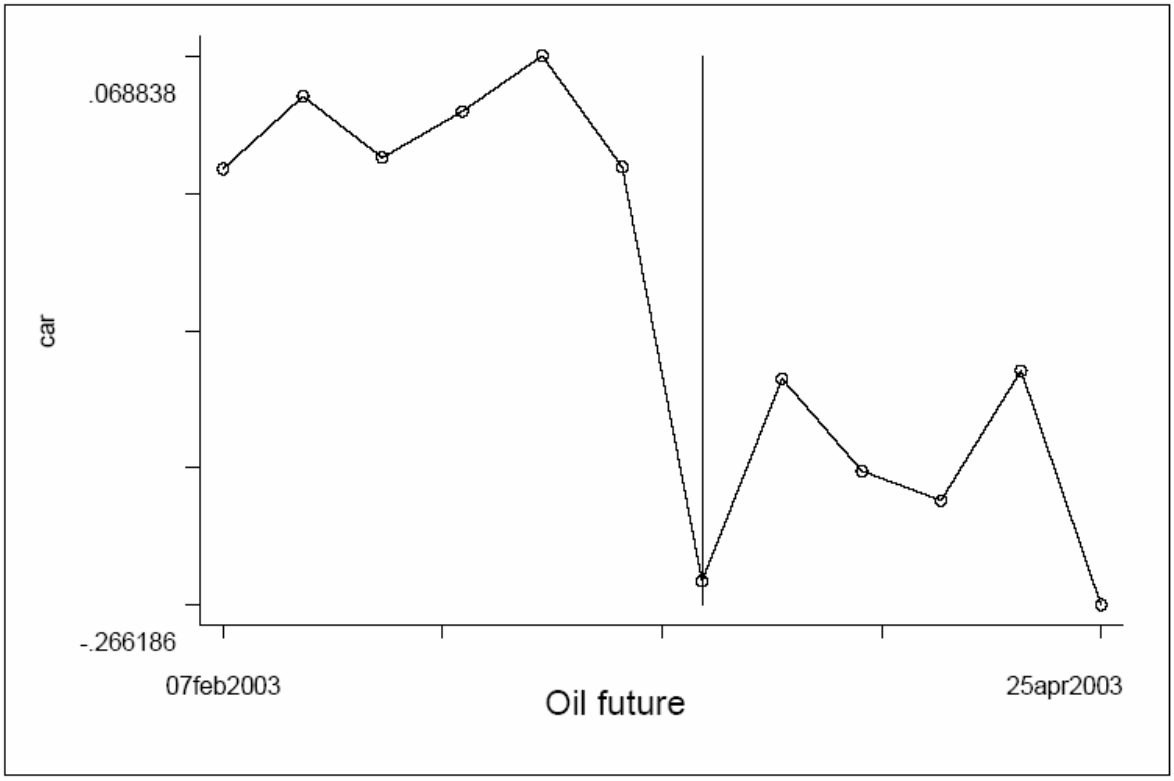
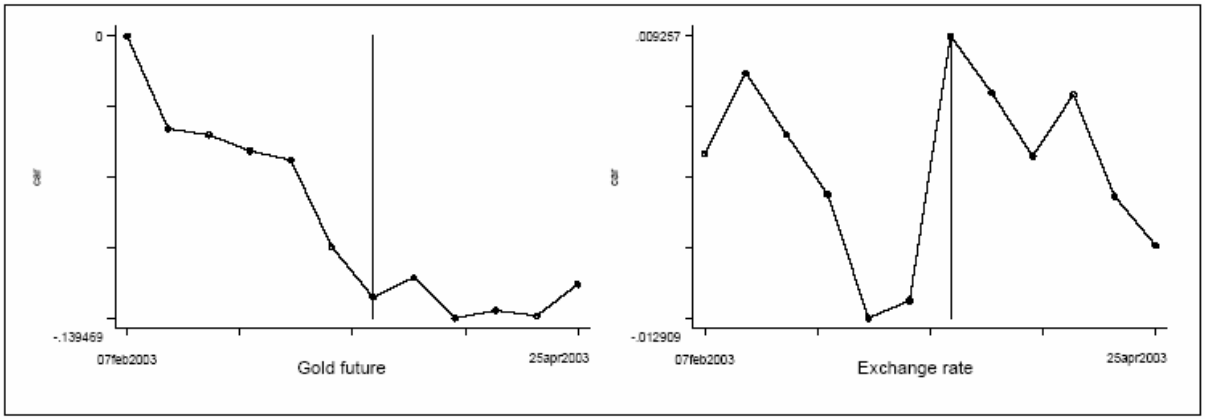


Figure 7: Safe-havens



Annex - Tables

Table 1: Conflicts

Full sample	112
SCOPE	
Internal	84
International	28
LOCATION	
Africa	39
Americas	16
Asia	23
Europe	19
Middle East	15
RESOURCES	
Oil	33

Table 2: MSCI Stock Indices (5% significance level; event window -0; +0)

	WORLD		USA		UK		FRANCE		JAPAN		DEFENSE	
	<0	**>0**	**<0**	**>0**	**<0**	**>0**	**<0**	**>0**	**<0**	**>0**	**<0**	**>0**
All	11.2	6.7	7.9	12.4	3.4	9	4.5	7.9	5.6	5.6	6.7	10.1
SCOPE												
Internal	13.4	4.5	7.5	10.5	3	4.5	1.5	7.5	6	4.5	9	9
International	8.3	12.5	8.3	16.7	4.2	20.8	16.7	8.3	4.2	8.3	0	16.7
LOCATION												
Africa	8.6	11.4	11.4	8.6	2.9	8.6	2.9	5.7	0	5.7	0	17.1
Asia	23.5	5.9	5.9	11.8	5.9	0	0	11.8	11.8	11.8	11.8	5.9
Americas	8.3	0	0	25	8.3	0	16.7	8.3	16.7	0	8.3	8.3
Europe	11.8	5.9	0	23.5	0	11.8	5.9	5.9	5.9	0	0	5.9
Middle East	8.3	8.3	16.7	0	0	25	8.3	8.3	0	8.3	25	8.3
RESOURCES												
Oil	10.3	3.5	3.5	13.8	0	6.9	3.5	6.9	6	3.5	13.8	3.5

Table 3: Commodities (5% significance level; event window -0; +0)

	CRB spot		CRB futures		GS Commodity		GS Agric comm		Oil futures		Gold futures		Exchange rate	
	<0	>0	<0	>0	<0	>0	<0	>0	<0	>0	<0	>0	<0	>0
All	5.9	2	7.8	3.9	3.5	5.8	4.6	5.8	8.2	6.6	3.7	4.9	4.5	4.5
SCOPE														
Internal	5.3	2.7	5.3	5.3	3.1	6.2	4.6	6.2	6.5	8.7	4.7	6.3	4.5	1.5
International	7.4	0	14.8	0	4.2	8.3	8.3	4.2	11.8	5.9	0	0	4.2	12.5
LOCATION														
Africa	2.7	0	5.4	2.7	0	3	0	6.1	8.3	4.2	6.1	0	5.7	5.7
Asia	4.8	4.8	9.5	9.5	5.9	0	5.9	0	0	10	0	12.5	5.9	5.9
Americas	7.1	0	0	0	0	0	8.3	0	0	11.1	0	0	0	0
Europe	5.9	5.9	0	5.9	0	11.8	5.9	11.8	6.3	6.3	6.3	6.3	0	0
Middle East	0	0	0	0	16.7	8.3	16.7	8.3	40	20	0	10	8.3	8.3
RESOURCES														
Oil	6.1	0	9.1	9.1	6.9	6.9	6.9	6.9	11.1	5.6	3.6	7.1	6.9	3.5

Table 4: Dummy Regression Approach: Stock Market Indices

	MSCI world	MSCI USA	MSCI UK	MSCI France	MSCI Japan	Defense
	(1)	(2)	(3)	(4)	(5)	(6)
Conflict	-0.001	0.001	0.002	0.000	-0.002	0.001
	(0.002)	(0.001)	(0.003)	(0.003)	(0.002)	(0.003)
Observations	1547	1547	1547	1547	1547	1774
R-squared	0.00	0.81	0.20	0.19	0.09	0.37

	MSCI world	MSCI USA	MSCI UK	MSCI France	MSCI Japan	Defense
SCOPE	(1)	(2)	(3)	(4)	(5)	(6)
Internal	-0.003	0.000	-0.002	0.002	-0.002	-0.002
	(0.002)	(0.001)	(0.003)	(0.003)	(0.003)	(0.003)
International	0.004	0.003	0.011**	-0.006	-0.006	0.009*
	(0.004)	(0.002)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	1547	1547	1547	1547	1547	1774
R-squared	0.00	0.81	0.20	0.19	0.09	0.37

	MSCI world	MSCI USA	MSCI UK	MSCI France	MSCI Japan	Defense
LOCATION	(1)	(2)	(3)	(4)	(5)	(6)
Africa	-0.001	-0.001	0.008*	-0.003	-0.000	0.007
	(0.003)	(0.002)	(0.004)	(0.004)	(0.004)	(0.005)
Americas	-0.007	0.010***	-0.013*	-0.010	-0.015**	-0.004
	(0.005)	(0.003)	(0.007)	(0.007)	(0.007)	(0.007)
Asia	-0.006	0.003	-0.012**	0.004	-0.005	-0.005
	(0.004)	(0.002)	(0.006)	(0.006)	(0.005)	(0.006)
Europe	0.001	0.001	0.000	0.004	-0.002	-0.002
	(0.004)	(0.002)	(0.006)	(0.006)	(0.006)	(0.007)
Middle East	0.009*	-0.004	0.019***	0.008	0.007	0.004
	(0.005)	(0.003)	(0.007)	(0.007)	(0.007)	(0.007)
Observations	1547	1547	1547	1547	1547	1774
R-squared	0.00	0.81	0.21	0.19	0.09	0.37

	MSCI world	MSCI USA	MSCI UK	MSCI France	MSCI Japan	Defense
RESOURCES	(1)	(2)	(3)	(4)	(5)	(6)
Oil	0.002	0.003	0.000	0.001	-0.005	-0.005
	(0.003)	(0.002)	(0.005)	(0.005)	(0.004)	(0.005)
Observations	1547	1547	1547	1547	1547	1774
R-squared	0.00	0.81	0.20	0.19	0.09	0.37

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5 : polarization - MSCI Stock Indices (5% significance level; event window -0; +0)

			WORLD		USA		UK		FRANCE		JAPAN		DEFENSE	
	Polarization	**Nr. obs**	**<0**	**>0**	**<0**	**>0**	**<0**	**>0**	**<0**	**>0**	**<0**	**>0**	**<0**	**>0**
All	High	42	12.5	9.4	9.4	15.6	6.3	6.3	9.4	6.3	3.1	3.1	12.5	9.4
	Low	41	8.8	8.8	5.9	11.8	2.9	11.8	2.9	8.8	5.9	8.8	5.9	5.9
SCOPE														
Internal	High	31	13	4.4	8.7	8.7	4.4	0	4.4	8.7	0	4.4	17.4	13
	Low	32	11.5	7.7	7.7	11.5	3.9	11.4	0	7.7	7.7	7.7	7.7	0
International	High	11	18.2	18.2	9.1	27.3	9.1	18.2	27.3	0	9.1	0	9.1	0
	Low	9	0	12.5	0	12.5	0	12.5	12.5	12.5	0	12.5	0	25
LOCATION														
Africa	High	17	14.3	14.3	14.3	14.3	7.1	7.1	0	0	0	7.1	14.3	0
	Low	18	0	11.8	5.9	5.9	0	11.8	5.9	11.8	0	5.9	0	11.8
Asia	High	9	0	0	20	0	0	0	0	20	0	0	40	0
	Low	8	42.9	14.3	0	28.6	14.3	0	0	14.3	14.3	14.3	0	0
Americas	High	9	12.5	0	0	25	12.5	0	25	12.5	12.5	0	12.5	12.5
	Low	7	0	0	0	25	0	0	0	0	25	0	0	0
Europe	High	5	20	20	0	40	0	20	20	0	0	0	0	0
	Low	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Middle East	High	6	25	25	0	0	0	0	25	0	0	0	25	25
	Low	7	0	0	16.7	0	0	33.3	0	0	0	16.7	33.3	0
RESOURCES														
Oil	High	12	20	10	0	10	0	0	10	0	0	0	20	10
	Low	14	0	0	7.7	7.7	0	15.4	0	7.7	7.7	7.7	15.4	0

Table 6: Polarization - Commodities (5% significance level; event window -0; +0)

		CRB spot		CRB future		GS Commodity		GS Agric comm		Oil		Gold		Exchange rate	
		<0	>0	<0	>0	<0	>0	<0	>0	<0	>0	<0	>0	<0	>0
All	High	9.5	4.8	9.5	7.1	6.7	13.3	6.7	10	10	10	0	3.7	0	6.3
	Low	2.8	0	8.3	2.8	2.9	0	2.9	2.9	9.1	4.6	3	6.1	11.8	2.9
SCOPE															
Internal	High	10.3	6.9	6.9	10.3	4.8	14.3	9.5	9.5	7.1	14.3	0	4.8	0	4.4
	Low	3.7	0	7.4	3.7	3.9	0	3.9	3.9	6.3	6.3	4	8	11.5	0
International	High	7.7	0	15.4	0	9.1	18.2	9.1	9.1	12.5	12.5	0	0	0	9.9
	Low	0	0	11.1	0	0	0	0	0	16.7	0	0	0	12.5	12.5
LOCATION															
Africa	High	6.2	0	6.2	0	0	8.3	0	8.3	0	12.5	0	0	0	7.1
	Low	0	0	5.9	5.9	0	0	0	5.9	7.7	0	5.9	0	11.8	5.9
Asia	High	0	11.1	11.1	22.2	20	0	0	0	0	0	0	20	0	0
	Low	0	0	0	0	0	0	0	0	0	33.3	0	16.7	14.3	0
Americas	High	11.1	0	0	0	0	25	12.5	0	0	16.7	0	0	0	0
	Low	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Europe	High	25	25	0	25	0	20	20	40	25	0	0	0	0	0
	Low	n.a	n.a	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Middle East	High	16.7	0	33.3	0	25	25	25	0	50	50	0	0	0	25
	Low	14.3	0	28.6	0	16.7	0	16.7	0	33.3	0	0	16.7	16.7	0
RESOURCES															
Oil	High	7.7	0	15.4	0	10	20	10	0	14.3	14.3	0	0	0	10
	Low	7.1	0	7.1	0	7.7	0	7.7	7.7	16.7	0	7.7	7.7	15.4	0